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Outfall 001

Phone: 412.442.4000

(ES) Keyrock Energy, LLC

(MUN) Dunbar

(AF) Dawson Treatment Plant

(CO) Fayette

Introduction

On April 25, 2008 the Department received a renewal application for NPDES permit No. PA0217778 previously issued to Belden & Blake Corporation for the Dawson Treatment Facility (Dawson). On June 5, 2009 the Department received a transfer application for the above referenced permit to Keyrock Energy, LLC. The previous permit authorized discharge of coal bed methane extraction production water after treatment by passive aeration and settling via Outfall 001 to the Youghiogheny River, a warm water fishery. The SIC code for the facility is 1311, Oil & Gas Extraction.

Effluent Limitation Rationale

Dawson is an existing treatment facility for water generated by dewatering coal seams from which methane gas will be extracted. This is also known as coal bed methane extraction. Many wells produce water from this activity in a given area and that water is conveyed via a pipe to a treatment facility. This is not a centralized waste treatment facility as defined by 40 CFR 437. Wastewater from the treatment of wastes received from off-site via conduit (e.g., pipelines, channels, ditches, trenches, etc.) from the facility that generates the wastes unless the resulting wastewaters are commingled with other wastewaters subject to this provision are not subject to the CWT effluent limit guideline as described in the applicability section of 40 CFR 437.

40 CFR 435 prohibits discharge of oil and gas production fluids from wells to surface waters of the commonwealth unless the wastewaters are removed to an “off-site” treatment facility. Off-site is defined as a central wastewater collection and treatment facility associated with a multiple well operation. Therefore, the conveyance of production wastewater from individual coal bed methane wells to a central wastewater treatment facility is considered “off-site”. Only coal bed methane production wastewater is accepted; it is not comingled with any other wastes. The treatment facility is subject to the provisions in the Oil & Gas Wastewater Permitting Manual (OGPM). The OGPM establishes technology based limits for total suspended solids, oil & grease, total iron, acidity and pH. Additionally, the manual requires that the following minimum treatment be employed:

- Flow equalization to ensure optimum treatment efficiency of the facilities and minimization of water quality impacts.
- Gravity separation and surface skimming, or equivalent technology, for oil and grease removal.
- Chemical addition for pH control and metals removal, if necessary (a pH range of 8.0-8.5 is desirable).
- Aeration, or equivalent technology, for reducing volatile petroleum hydrocarbons and oxidation for metals removal.
- Settling (retention) or filtration for removal of solids, including oxidized metals.

At this time, the facility uses flow equalization, passive aeration and settling. As long as the permittee is able to meet the effluent limits in its permit then the treatment is sufficient. If compliance becomes an issue then the Department may require additional treatment technologies to be implemented.

Additionally, Dawson is subject to the effluent standards for total dissolved solids (TDS) as required in Pa Code Chapter 95.10. The facility was in existence prior to August 2010 and therefore has an authorized TDS load associated with it. To establish the authorized load, the average and maximum discharge concentration for TDS reported on the April 25, 2008 permit application were used in conjunction with the average and maximum design flows for the facility to determine the average and maximum loadings. The loadings are designated in Part C III of the permit. If the existing daily discharge loads of TDS are exceeded, or as a result of facility expansions, production increases, process modifications, or any change of the waste stream, an increase of the average or maximum discharge load of TDS specified above is expected to occur, the permittee must report the exceedance and/or proposed expanded TDS loads to the Department in writing. Any new or increased average or maximum discharge loads of TDS must be approved in writing by the Department before the permittee may commence the new or increased discharge of TDS. The Department will determine if the permittee will be required to submit a new permit application and obtain a new or amended permit before commencing the new or increased discharge of TDS.

Part C of the permit also contains special conditions related to chemical additives.

Draft permit issuance is recommended.

ADDENDUM

This permit is being published in draft for a second time to amend the Part C condition related to Chapter 95.10- Total Dissolved Solids Loading.

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Comments were received from the Environmental Protection Agency on May 8, 2013 on the second draft of the permit. Below are the comments with response:

According to the Water Quality Protection Report (WQPR), the water quality calculations for Osmotic Pressure (OP) assumed a background value of 0 (zero). Although we recognize that the outcome would likely be the same regarding any need for a WQBEL, we feel an assumed background of zero is not appropriate. We have seen in similar situations the use of background TDS levels converted into OP. Please revisit your OP background assumption accordingly and revise the WQPR and draft permit as appropriate.

Upstream concentrations of osmotic pressure or total dissolved solids were not available at this location. The permittee is not required to supply upstream concentrations with their permit application. Therefore, because data was not available, an upstream concentration of zero was assumed. The Department concurs with EPA's contention that the outcome would likely be the same if background data was used in the calculations. (The stream flow to discharge flow ratio is large). Because of this large ratio, a water quality based effluent limitation for OP is not necessary. Therefore, the permit will remain the same.

Part C.I.E. of the draft permit discusses OP. However, there is no monitoring requirement for OP in Part A. Please add OP monitoring in Part A of the permit.

Part C.I.E. gives a definition for OP. This was added in error and is unnecessary. Due to the large stream flow in comparison to the discharge flow there is no need for an OP WQBEL or monitoring requirement, as discussed above. The definition of OP in Part C.I.E. will be removed from the permit and Part A will remain the same.

We recognize the small instream waste concentration that this discharge creates. However, the high concentration of TDS (over 11,200 mg/L based on 561 lbs/day at 6,000 gals/day) allowable under the exemption from Chapter 95.10

indicates the possibility of high concentrations of chlorides, sulfates or other pollutants. Chloride is already included in the draft permit, however, we also recommend monitoring of other pollutants common in oil and gas extraction wastewaters, such as sulfate and bromide.

Coalbed methane production water is characteristically different from other natural gas extraction wastewaters. Essentially a coal seam is dewatered in order to extract the entrapped natural gas. Therefore, it has different properties than other natural gas wastewaters such as those found in the shale natural gas industry. Both sulfate and bromide were reported to be believed absent on the permit application. The Department conducted sampling at coalbed methane facilities in December 2011 to fully characterize the wastewater and both bromide and sulfate were present at low concentrations. The maximum concentration of bromide detected was 28.15 mg/L and the maximum concentration of sulfate detected was 12.18 mg/L. There is no water quality criterion for bromide. The water quality criterion for sulfate is 250 mg/L applied at the nearest downstream potable water supply intake which is 36.18 miles downstream from the discharge location. Based on this information the Department has determined that monitoring for bromide and sulfate is unnecessary.

No other comments were received. Permit issuance is recommended.

